



Project no. 4CE439P3

URBAN_WFTP

**Introduction of Water Footprint (WFTP) Approach in Urban Area
to Monitor, Evaluate and Improve the Water Use**

WP 5.5.2 – Water Footprint Improvement Assessment

Lead contractor for deliverable WP 5.5.2: ENEREA

Prepared by: alpS (PP6)

Start date of project: 1 November 2012

Duration: 25 months

Submission date: November 2014

Targeted results

Output 5.2.3 explains two different improvement aims.

Aim 1 was the quantitative extension of the awareness building programme. Here it was planned to extend the awareness building tool (developed in WP4) from the original 45 school kids and 2 teachers to ca. 1000 school kids and ca. 100 teachers.

To achieve this ambitious aim it was not possible to apply the entire awareness building tool. Instead we choose to spotlight the issues of water resources and water footprint during a so called *water week*. During this *water week* some of the original 45 school kids informed their school mates on these issues. Ca. 700-800 school kids were informed during this *water week*.

Additionally, we focused on the teachers. As part of the training session (WP 6.2.5) we trained the teachers in the method how to monitor and calculate the water footprint. Originally this was planned to be done with all the teaching staff (ca.100 teachers) at our partner school. However, due to administrative and organisational reasons, instead we focused on all class teachers (35 teachers). 17 of those teachers monitored with their classes their water footprint for 1 week. Thereby we were able to increase the sample size from 45 to 224 participants.

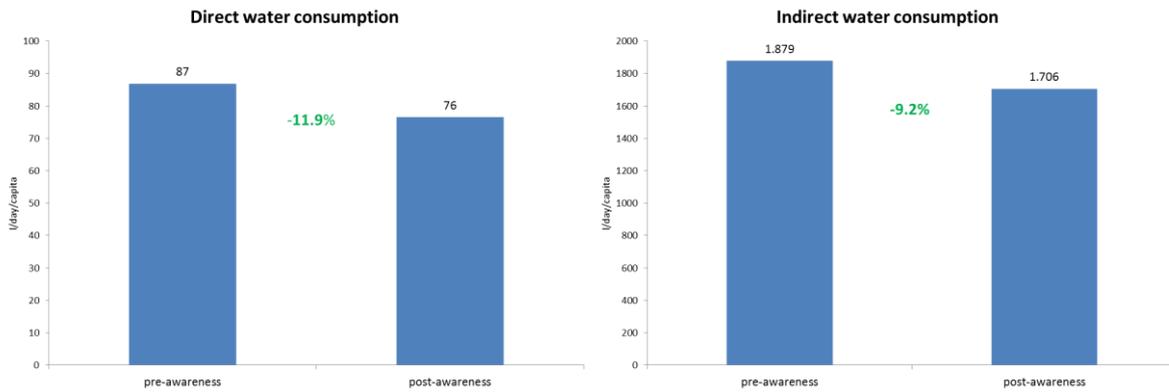
Aim 2 focused on the qualitative extension of the awareness building programme and potential WFTP reduction. Here it was planned to analyse whether our awareness building programme had any effect on the water footprint. This analysis is based on the sample size of the original 45 school kids, by comparing their water footprint before the awareness building (10.2013) and after (09.2014). In output 5.2.4 we calculated a potential reduction of approx. 21% virtual water consumption. This in turn would reduce the overall water footprint consumption by 11%.

It was not possible to achieve this very ambitious aim. Instead virtual water could be reduced by 9.2%. However, in addition to virtual water, also the direct water could be reduced. Both direct and virtual water together add up to a reduction of 9.3% of the total water footprint (see Table 1).

Table 1: Comparison of targeted and achieved results.

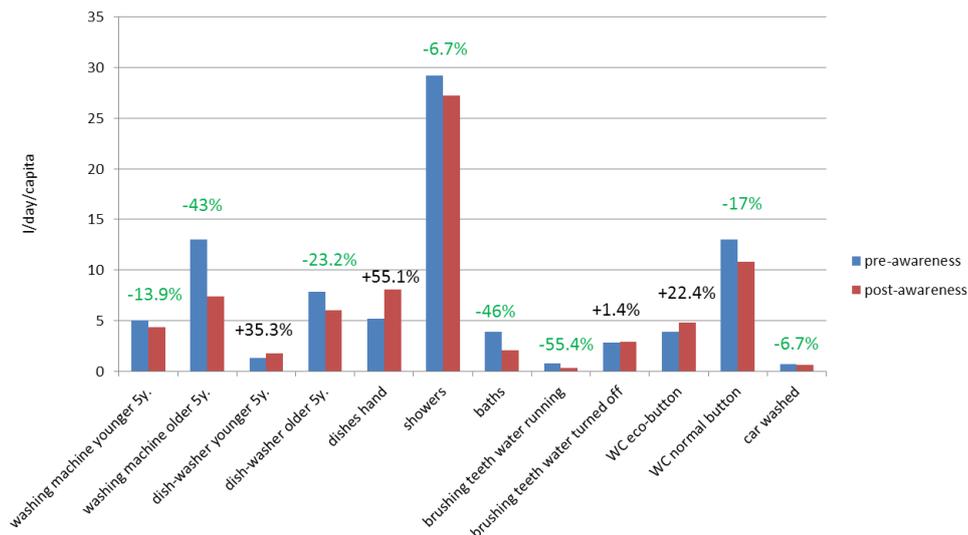
	Targeted results	Achieved results
Virtual water reduction	21%	9.2%
Direct water reduction	--	11.9%
Total water footprint reduction	11%	9.3%

Figure 1: Reduction of direct and indirect water consumption. Shown are the water consumption in litre before the awareness building campaign and after.



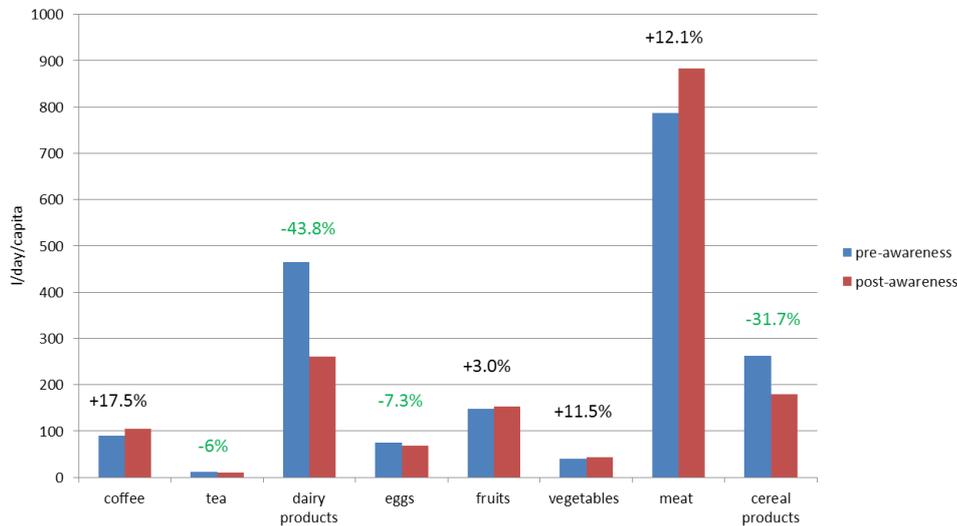
Direct water consumption was reduced by 21 litre/day/capita (l/d/c), see Figure 1. This change was mainly caused by a reduced use of washing machines. Furthermore, some households had bought new washing machines during the monitoring period and thus reduced their water consumption. With both of these changes together on average ca. 6 l/day/capita could be saved alone. In addition to this, the school kids were able to reduce their water consumption which accrues from having showers and using a normal toilette buttons. Both behavioral changes together accounted for ca. 2 l/day/capita to the direct water reduction. Remarkably, cleaning the teeth whilst the tab was running could be reduced by over 55% (Figure 2).

Figure 2: Changes of direct water footprint.



Indirect water consumption was reduced by 173 l/d/c, see Figure 1. Despite an increased water footprint of meat products, the overall virtual water footprint decreased by 9%. This reduction is mainly caused by a reduced consumption of dairy products (Figure 3).

Figure 3: Changes of indirect water footprint.



Time horizon

In order to review the time horizon for the improvement plan, also the overall project time span needs to be considered. The project duration was 25 months. During this period several phases had to be covered: Developing a methodology for WFTP assessment → Implementing this method and collecting data on WFTP → Analyzing the WFTP → Setting up of an improvement plan → Implementing this improvement plan → Evaluating the improvement.

This was a very ambitious aim for the duration of 25 months and therefore there was only little time for some of the phases, in particular, “implementing the improvement plan” and “evaluating the improvement”.

For this reason, the improvement plan and its implementation was designed to be carried out within a short period of time. During the improvement implementation we could increase the sample size from 45 to 224 participants. Due to limited time, however, we were not able to have a second “post-awareness” assessment with all of these participants. Only for the original 45 participants there was sufficient time for this second assessment. Also, in order to analyse these data more into detail more time would be necessary.

Difficulties and risks

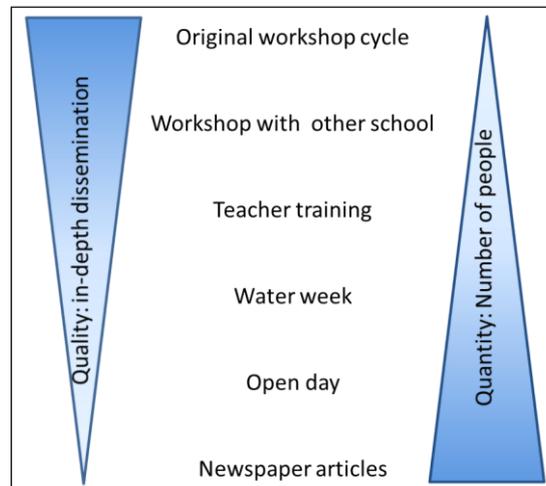
Right from the start of the project we encountered some coordination difficulties with the local water supplier. Therefore we contacted other water suppliers from the area, e.g. “Kommunalbetriebe Rinn”. This water supplier cooperated with us in several tasks described in the improvement plan.

Effectiveness of measures and stakeholder engagement

In order to achieve the targeted results several measures and methodologies had to be applied. This methodological mix proved to be very effective (Figure 4). Only by doing it this way, it was

possible to have an in-depths evaluation of WFTP reduction on the one hand, and to inform as many people as possible about water consumption and the water footprint on the other hand.

Figure 4: Mix of measures to achieve the improvement aims.



All these activities were only possible because of the very good cooperation with our stakeholders, in particular with our school partner. In fact, the teachers training and the water week were only possible because of our school partner's strong commitment and motivation.